

Advanced Opaque Armor Materials and Manufacturing Methods

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Description:

OBJECTIVE: Develop a low cost, light weight armor package that has reduced visual signature while offering high protection against threats for Non Standard Commercial Vehicles (NSCV).

DESCRIPTION: Modified commercial vehicles are a staple of Special Operations activities. One reason a commercial vehicle is used is to blend in with local vehicles. They serve a purpose of enabling advance mobility platforms access to sensitive or denied areas while operating undetected and/or indistinguishably from indigenous platforms. At the same time as remaining inconspicuous, it is necessary to include protection to allow the vehicle and Operators to engage in activity as needed to accomplish the mission which may include the need for an armored vehicle with mobility allowing fast movement over terrain considered impassable. Traditional armor consists of individually formed plates attached together underneath the vehicle sheet metal. This method can lead to seams and joints where ballistic coverage may be compromised. It can also add difficulty to making the vehicle look like its indigenous counterparts. This SBIR topic seeks innovative light weight armor packages for NSCVs that are low in cost, reduce vehicle visual signatures, and provide increased vehicle functionality and available space. **PHASE I:** Conduct a feasibility study to develop low cost, light weight armor package alternatives that reduce visual signatures while offering high protection against threats (see reference) for NSCVs. Assess and determine viable armor solutions that can be applied to a NSCV, highlighting the manufacturing and installation processes and the system enhancements the armor solution will provide in terms of weight, space, cost, visual signature, threat performance and functionality. Comparison of the proposed solutions against current standard armoring solutions will be conducted and documented to show the pros and cons of the innovative armor in a vehicle sized application. The objective of this USSOCOM Phase I SBIR effort is to conduct

and document the results of a thorough feasibility study to investigate what is in the art of the possible within the given trade space that will satisfy a needed technology. The feasibility study should investigate all known options that meet or exceed the minimum performance parameters specified in this write up. It should also address the risks and potential payoffs of the innovative technology options that are investigated and recommend the option that best achieves the objective of this technology pursuit. The funds obligated on the resulting Phase I SBIR contracts are to be used for the sole purpose of conducting a thorough feasibility study using scientific experiments and laboratory studies as necessary. Operational prototypes will not be developed with USSOCOM SBIR funds during Phase I feasibility studies. Operational prototypes developed with other than SBIR funds that are provided at the end of Phase I feasibility studies will not be considered in deciding what firm(s) will be selected for Phase II. PHASE II: Develop a detailed design of the selected armor solution in an NSCV, including drawings and Computer Aided Design. Installation instructions will be created to illustrate that the solution can be retrofitted into a NSCV. Manufacture and ballistically test armor coupon prototypes to validate that the selected solution can meet the current threats the NSCV"s are designed against. Acquire a NSCV equivalent vehicle, manufacture a full vehicle kit of armor and perform a full vehicle installation of the armor kit. All projected enhancements from Phase I will be validated or updated based on the actual results identified in Phase II to quantify in detail the benefits (and any impacts) of the new system. PHASE III DUAL-USE APPLICATIONS: Partner with the current Special Operations Forces (SOF) NSCV manufacturer to embed the armor into future SOF NSCVS. Commercially, a new armor solution with the benefits cited above would enable the SBIR contractor to partner with a current vehicle armoring company that produces privately armored vehicles with similar goals as the SOF vehicles.